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Prog. Report
102028

November 15, 1968
Ref 12017

U. S. Government

Attention: Contracting Officer

Subject: Contract

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Gentlemen:

Enclosed is the fourth report (one copy each) of progress and expenditure on subject contract.

If you have any questions, please contact the undersigned.

Very truly yours,

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Director Contracts and Administration

GAH:efd

Enclosure

cc:

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R-107-68

PROGRESS REPORT NO. 4
ADVANCED LIGHT TABLE

Report Period: 1 October 1968 to 1 November 1968

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15 November 1968



1. SUMMARY OF PROGRESS

During the report interval 1 October to 1 November design finalization continued in all areas of the light table design in which information was available except controls design in which [] was waiting for comments by the project sponsor in the area of human engineering information. This information was discussed with the program sponsor's project engineer during a meeting on 30 October and 1 November. Progress by areas may be summarized as follows:

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- 1) Upper unit of the light table
 - a) Light box assembly (light grid and shade) - 95% complete.
 - b) Lower light box assembly (manual and motor drive system) - 85% complete.
 - c) Fixed reel support - 80% complete.
 - d) Movable reel support - 60% complete.
- 2) Base unit
 - a) Tilt drive unit and transformer compartment - 40% complete.
- 3) Electrical and electronic control circuits
 - a) Prototype units designed and completed.
 - b) Selection of control hardware - 70% complete.
- 4) Manufacturing releases - 75% complete.
- 5) Overall project completion is approximately 50% complete.

2. ACTIVITY DURING REPORT INTERVAL

2.1 Film Transport System

2.1.1 The motor drive system was changed to a 4 to 1 drive ratio by adding a gear stage between the motor shaft and the first chain sprocket. This ratio will provide a factor of 2.25 over the minimum rewind speed required or approximately 560 ft./min. The first stage pinion gear and all sprockets are of nylon or glass fibre filled nylon to reduce operating noise.

2.2 Illumination System

The light grid and controlling circuitry for the prototype model table was completed and tested during the report interval. Modifications to the grid reflector will be made to obtain the 10% evenness of illumination as required by the specification. The illumination system was demonstrated to the program sponsor's project engineer on 1 November.

2.3 Light Table Controls

A marked print on proposed control arrangement was forwarded to the program sponsor during the previous activity period. This proposal was discussed verbally during a meeting with the program sponsor's project engineer on 31 October and 1 November. This meeting finalized the location, sizes and or shapes of the various controls based on the controls required and the human engineering aspects provided by the project engineer. A discussion of the controls is as follows:

2.3.1 Top of Upper Unit. Film speed and direction control, manual-off-power tension switch and light intensity control left to right in that order are located in the front center of the table top and recessed below the viewing surface to prevent accidental movement. The film speed and direction control knob will be approximately 1 1/2 inch. in diameter with a scalloped skirt. Pointer to be on both the skirt and knob top. The film tension switch is to be a three position rocker switch with positions of manual, off and power. The light intensity control knob will be approximately 5/8 inch. in diameter with serrations and round dial skirt. The shade control thumb wheel with axis parallel to table top will be straight knurled for easy operation and recessed below the viewing surface. The wheel is 3/16 inch. wide and located in the front left hand corner of the table top.

2.3.2 Front of Upper Unit. The tension controls (manual and power) and the power on-off switch are center located on the front of the upper unit. The manual tension knob will be approximately 1/2 inch. across, with pointer and round skirt.

The power tension knob will be a single pointer knob but with a different "feel" to make a distinction between the two. The power on-off switch will be a "push on"- "push off" illuminated switch. Guards in the form of trim will isolate this control cluster.

2.3.3 Base Unit. On the right side of the base unit will be located the tilt switch. This switch will be a rocker switch with "up"- "down" and spring loaded center "off" position.

2.3.4 Manual Wind Handwheel. The handwheel will be a 4 1/2 inch. diameter by 1/4 inch. thick solid metal disk with folding handle. The folding handle will be detented in the folded position and be 1 inch in diameter by 3 3/4 inches long. The handle will rotate relative to the disc so that a firm grip can be maintained during handwheel rotation.

2.3.5 Control Nomenclature. All controls will be marked as to function and/or position as required for ease of operation.

2.4 Electronic Circuit Boards

The three circuit boards (light intensity, dual motor control, logic and filter) have been completed and tested for the prototype light table.

2.5 Fixed Reel Support

2.5.1 Reel Support Control and Nomenclature. Nomenclature and controls in accordance with suggestions by the program sponsor's project engineer during meeting 30 October and 1 November are as follows: The control for film wind "in" or "out" will consist of a round, skirted knob with a bar across the top of the body that extends beyond the diameter of the knob skirt. The bar will have a 5/8 diameter x 21/32 long handle at a right angle to the bar. The handle is "hour glass" shape for a good finger grip. The centerline of the handle is 1 5/16 from the centerline of rotation which should provide the rotary torque necessary for easy operation. This control configuration will be more consistent with the

functional operation of the control which is two position with approximately 340° of rotation. The nomenclature will consist of words "film wind" and a pictorial legend showing film wound "in" or "out". The legends will provide simple interpretation of the control operation in lieu of the words "in" and "out". Arrows will denote direction of rotation and the knob bar and handle will serve as a pointer in denoting position of the control knob. The tracking adjust control will consist of a round, skirted knob 1 3/4 dia. with infinite adjustment between the maximum "in" and "out" positions. The nomenclature will consist of the words "tracking adjust", "in" and "out" with arrows denoting direction of rotation.

2.6 Movable Reel Support

The support detent will adjust for film widths of 70mm, 5 inches, 6 1/2 inches and 9 1/2 inches.

2.7. Overall Height of Light Table

The overall height of the light table in the horizontal position is approximately 10 inches. Optimum design consideration for size of drive motors in the upper unit and size of illumination transformers in the lower unit dictated the final overall height.

2.8 Carrying Handles

Carrying handles will be added to the base unit per discussion with the program sponsor's project engineer.

2.9 Electrical Schematic

An overall electrical schematic of the viewing table was completed during the report period.

3. PROGRAM FOR NEXT INTERVAL

3.1 Completion of design and detailing of parts in the following areas will be continued during the next reporting interval:

3.1.1 Selection of (and nomenclature for) controls as discussed in paragraphs 2.3 and 2.5.1.

3.1.2 Mechanically rotatable joint between tilt plate and upper unit.

3.1.3 Sliding Reel Support

3.1.4 Control Panels

3.1.5 Tilt Drive Mechanism

3.2 Continued Release of Parts to Manufacturing.

4. ORAL AGREEMENTS ON TECHNICAL MATTERS

Discussed in previous paragraphs relating to areas of controls in relation to human engineering.

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